PRELIMINARY TECHNOLOGY ASSESSMENT

# Dual Zone Indoor Shades

## What is this Technology?

Standard window shade technologies block sunlight from interior workspaces in an effort to reduce glare and unwanted heat gain, resulting in unnecessary reliance on wasteful artificial lighting. Dual zone indoor shades address this problem by integrating two separate daylight control strategies into a single unit—an upper louvered blind that maximizes daylight harvesting and a lower roller shade that controls glare and reduces window heat gains and losses. The upper light-harvesting zone is composed of inverted horizontal louvers, while the lower zone is made of a translucent solar shade that diffuses natural light and reduces glare while maintaining outdoor views. The upper and lower sections can be either manually or automatically controlled with a stand-alone application or through integration with a building automation system. GPG will test two versions of the dual-zone shade: 1) manually controlled upper and lower shades; and 2) automated upper shades (stand-alone) with manually controlled lower shades.

## Why is GSA Interested?

Dual zone shades can improve occupant satisfaction by providing access to natural light and views while increasing thermal comfort and eliminating glare. Reducing reliance on artificial light and increasing control of solar heat loss and gain present significant potential for energy savings.

**ENERGY EFFICIENCY** The manufacturer estimates greater than 10% lighting energy savings as well as 14% HVAC savings, when compared with a cloth roller shade.

**COST-EFFECTIVENESS** Payback is estimated at between 8 and 10 years, assuming advanced lighting controls are already in place. Installed costs range between $12/ft$^2$ and $14/ft$^2$; motorization and automated systems add between $10/ft$^2$ and $15/ft$^2$.

**OPERATIONS & MAINTENANCE** Installation is simple with minimal impact on the building. Maintenance and cleaning is similar to that of other interior shades.

**OCCUPANT SATISFACTION** By controlling glare and minimizing uncontrolled heat gain and heat loss, dual zone shades promise to increase visual and climate-related occupant satisfaction.

**DEPLOYMENT POTENTIAL** The technology is best suited to open-plan offices with partitions that are less than 48" in height, and windows with a head height of greater than 9 feet and that have unobstructed access to direct sunlight with minimal exterior attachments.

*The Green Proving Ground program, in association with a federal laboratory, is subjecting dual zone indoor shades to real-world measurement and verification in GSA buildings. Results will be published on the GPG website, www.gsa.gov/gpg.*

GPG
Green Proving Ground Program

The Green Proving Ground program leverages GSA's real estate portfolio to test innovative building technologies. The program helps GSA meet its sustainability goals by providing actionable data that informs investment decisions targeted at energy-use reduction.